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polyhedron Y. There is just one minimal **triangulation** of Y, namely that one in which every vertex trees belong to the same open cube if they are **homeomorphic** in a fashion which preserves labels and **edges** every vertex is either an end (belongs to just one **edge**, called a free **edge**) or a node (belongs to at zeus.math.univ-paris13.fr/~sarah/papers/paper.ps

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Unlike many other approaches, we perform **triangulation** in three-dimensions and utilise this extra whose star $S(i)$ is topologically equivalent, or **homeomorphic**, to a disc (fig. 3) A mesh is called on vertex decimation, as opposed to the common **edge-collapse** operation. Our basic simplification www.dcs.shef.ac.uk/~marke/pubs/ErrorPolyhedraEGUK.pdf

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Simon A. King How To Make A **Triangulation** Of S^3 Polytopal Draft Version. September M, and the task is to recognize whether M is **homeomorphic** to S^3 or not. Starting with T, the local moves, e.g. stellar subdivisions along **edges** [A] or bistellar moves [Pa] In general, there www-irma.u-strasbg.fr/irma/publications/2000/00035.ps.gz

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we do not decrease the representativity of the **triangulation**. Let $T(n)$ be a **triangulation** of 6 obtained if neither of the components of $60C$ is **homeomorphic** to an open disc. A graph is said to be e i f i be respectively the number of vertices, **edges** and faces after the i th iteration. By Euler's grserv.med.jhmi.edu/~przytyck/cycles3.ps.Z

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 set with a polygonal boundary #Let T h be a **triangulation** or **quadrangulation** off# and let #h be a
 Recall (cf. Ciarlet [5, Chap. II])that a **triangulation** T h off# is a partition of off# into nondegenerate
 boundary #Let T h be a **triangulation** or **quadrangulation** off# and let #h be a standard associated
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 degree d, 4 n is the nth refinement of a given **triangulation** 4 0 by using standard uniform regular
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 disks on R so that disk centers induce a mixed **triangulation/quadrangulation** respecting the boundary of
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 that disk centers induce a mixed **triangulation/quadrangulation** respecting the boundary of polygon P .We
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Convex Preserving Scattered Data Interpolation Using Bivariate .. - Lai (2000) (Correct) (1 citation)
 C 3 (Omega\Gamma .If we refine the underlying **triangulation** sufficiently many times so that j j is
 space over the PowellSabin refinement of a **triangulation** of the data points to find a convex
 power of splines on triangulated **quadrangulations**, SIAM J. Num. Analysis, 36(1999)143-159.
www.math.uga.edu/~mjlai/app/convex.ps

Experimental Results on Quadrangulations of Sets of.. - Bose, Ramaswami.. (Correct)
 to solve this problem by converting "nice" **triangulations** to the desired **quadrangulations** with the aid

matchings computed on the dual graph of the **triangulations**. We report experiments on several versions of www.scs.carleton.ca/~jit/publications/papers/brtt02.ps

Efficient Algorithms for Petersen's Matching Theorem - Biedl, Bose, Demaine, Lubiw (Correct)
is exactly the collection of duals of planar **triangulations** where the outside face is a triangle. A for numerical simulations and for converting **triangulations** into **quadrangulations**, as described in guarding, adaptive mesh refinement, and **quadrangulation**. 1 Introduction In 1891, Petersen [29] www.scs.carleton.ca/~jit/publications/papers/bbd199.ps

Characterizing and Efficiently Computing Quadrangulations .. - Prosenjit Bose Godfried (1997) (Correct)
Of particular importance is the study of **triangulations** of point sets due to its many applications in may be more desirable objects than **triangulations**. A **quadrangulation** of a set of points S is a Characterizing and Efficiently Computing **Quadrangulations** of Planar Point Sets Prosenjit Bose www.scs.carleton.ca/~jit/publications/papers/bt97.ps

On The Approximation Power Of Splines On Triangulated.. - Lai, Schumaker (1999) (Correct)
(of smoothness r and degree $3r$ defined on **triangulations** which are obtained from arbitrary for constructing them) Let be the **triangulation** obtained by inserting the diagonals of each Power Of Splines On Triangulated **Quadrangulations** *Ming-Jun Lai Y Larry L. Schumaker Z www.math.uga.edu/~mjlai/papers/siamsr3r.ps

Bivariate Spline Method for Numerical Solution of Steady State .. - Lai, Wenston (1999) (Correct)
1.6 1.8 2 Figure 1. **Quadrangulation** and Derived **triangulation** of L-shaped Domain quadratic finite elements. the number of the triangles in the underlying **triangulation** while the time for solving a linear system is smoothness r and degree $3r$ over triangulated **quadrangulations**. The stream function formulation for the www.math.uga.edu/~mjlai/papers/paper37.ps

On Schwarz's Domain Decomposition Methods for Elliptic.. - Lai, Wenston (1996) (Correct)
as the number of triangles in the underlying **triangulation** is increased, which is indispensable for method using an appropriate spline space over a **triangulation** Δ , reduces the PDE problem to a linear using C^1 cubic spline functions over a **quadrangulation** of the given domain. The computer www.math.uga.edu/~mjlai/papers/paper33.ps

On C^2 Quintic Spline Functions Over Triangulations of.. - Lai (1996) (Correct)
On C^2 Quintic Spline Functions Over **Triangulations** of Powell-Sabin's Type Ming-Jun Lai Abstract. Type Ming-Jun Lai Abstract. Given a **triangulation** \mathcal{T} of a polygonal domain, we find a refinement type may be obtained from a special type of **quadrangulation**. For an arbitrary **quadrangulation** Lai and www.math.uga.edu/~mjlai/papers/paper28.ps

Bivariate Spline Method for Navier-Stokes Equations: Domain.. - Lai, Wenston (Correct)
convex quadrilaterals and be the special **triangulation** obtained from by adding the two diagonals of of an L-shape domain and the derived **triangulation**. Let $S \subset \Omega$ (fs $2 \subset \Omega$) Γ space to solve these equations. Let be a **quadrangulation** of Ω which consists of non-degenerate www.math.uga.edu/~mjlai/papers/lai.ps

Bivariate Spline Spaces on FVS-triangulations - Lai (Correct)
Bivariate Spline Spaces on FVS-**triangulations** Ming-Jun Lai Abstract. FVS-**triangulation** is a FVS-**triangulations** Ming-Jun Lai Abstract. FVS-**triangulation** is a special but very flexible over such **triangulations**. x1 Introduction A **quadrangulation** is a union of convex quadrilaterals www.math.uga.edu/~mjlai/papers/paper31.ps

Acyclic List 7-Coloring Of Planar Graphs - Borodin, Fon-Der Flaass, Kostochka (2001) (Correct)
is based on a structural property of the plane **triangulations** (loops and multiple edges are allowed) which by itself. The weight, $w(f)$ of a face f in a **triangulation** is the degree sum of its boundary vertices. them as new vertices. The result is a **quadrangulation** with all faces of the type $(3 \ 4 \ 4 \ 4)$ By dept-info.labri.u-bordeaux.fr/~sopena/Papiers/Comprimes/bfkr01b.ps.gz

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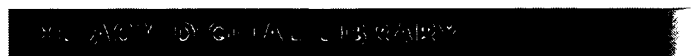
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1 [O\(nlog log n\)-work parallel algorithms for straight-line grid embeddings of planar graphs](#)

Martin Furer, Xin He, Ming-Yang Kao, Balaji Raghavachari

 June 1992 **Proceedings of the fourth annual ACM symposium on Parallel algorithms and architectures**

 Full text available: pdf(1.02 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

2 [Efficient algorithms for Petersen's matching theorem](#)

Therese C. Biedl, Prosenjit Bose, Erik D. Demaine, Anna Lubiw

 January 1999 **Proceedings of the tenth annual ACM-SIAM symposium on Discrete algorithms**

 Full text available: pdf(1.24 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

3 [A near-optimal heuristic for minimum weight triangulation of convex polygons](#)

Christos Levkopoulos, Drago Krznaric

 January 1997 **Proceedings of the eighth annual ACM-SIAM symposium on Discrete algorithms**

 Full text available: pdf(1.24 MB) Additional Information: [full citation](#), [references](#), [index terms](#)

4 [Topology: Morse-smale complexes for piecewise linear 3-manifolds](#)

Herbert Edelsbrunner, John Harer, Vijay Natarajan, Valerio Pascucci

 June 2003 **Proceedings of the nineteenth conference on Computational geometry**

 Full text available: pdf(363.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We define the Morse-Smale complex of a Morse function over a 3-manifold as the overlay of the descending and ascending manifolds of all critical points. In the generic case, its 3-dimensional cells are shaped like crystals and are separated by quadrangular faces. In this paper, we give a combinatorial algorithm for constructing such complexes for piecewise linear data.

Keywords: Morse theory, combinatorial algorithms, computational geometry and topology, densities, triangulations

5 Hierarchical morse complexes for piecewise linear 2-manifolds

Herbert Edelsbrunner, John Harer, Afra Zomorodian

June 2001 **Proceedings of the seventeenth annual symposium on Computational geometry**

Full text available:  [pdf\(579.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present algorithms for constructing a hierarchy of increasingly coarse Morse complexes that decompose a piecewise linear 2-manifold. While Morse complexes are defined only in the smooth category, we extend the construction to the piecewise linear category by ensuring structural integrity and simulating differentiability. We then simplify Morse complexes by cancelling pairs of critical points in order of increasing persistence.

Keywords: algorithms, hierarchy, implementation, terrains

6 Construction of contour trees in 3D in $O(n \log n)$ steps

Sergey P. Tarasov, Michael N. Vyalys

June 1998 **Proceedings of the fourteenth annual symposium on Computational geometry**

Full text available:  [pdf\(1.16 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

7 Primitives for the manipulation of general subdivisions and the computation of Voronoi

Leonidas Guibas, Jorge Stolfi

April 1985 **ACM Transactions on Graphics (TOG)**, Volume 4 Issue 2

Full text available:  [pdf\(3.55 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The following problem is discussed: given n points in the plane (the sites) and an arbitrary query point q , find the site that is closest to q . This problem can be solved by constructing the Voronoi diagram of the given sites and then locating the query point in one of its regions. Two algorithms are given, one that constructs the Voronoi diagram in $O(n \log n)$ time, and another that inserts ...

Keywords: Euler operators, Voronoi and Delaunay diagrams, closest point, computational topology, convex hull, geometric primitives, nearest neighbours, planar graphs, point location, representation of polyhedra, triangulations

8 Planar graph decomposition and all pairs shortest paths

Greg N. Frederickson

January 1991 **Journal of the ACM (JACM)**, Volume 38 Issue 1

Full text available:  [pdf\(3.26 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

An algorithm is presented for generating a succinct encoding of all pairs shortest path information in a directed planar graph G with real-valued edge costs but no negative cycles. The algorithm runs in $O(pn)$ time, where n is the number of vertices in G , and p is the minimum cardinality of a subset of the faces that cover


all vertices, taken over all planar embeddings of G

Keywords: NP-completeness, all pairs shortest paths, approximation algorithm, compact routing table, graph embedding, outerplanar graph, planar graph, succinct encoding

9 Determining contractibility of curves

Haijo Schipper

July 1992 **Proceedings of the eighth annual symposium on Computational geometry**

Full text available:  pdf(775.34 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

10 Dynamic skin triangulation

Ho-Lun Cheng, Tamal K. Dey, Herbert Edelsbrunner, John Sullivan

January 2001 **Proceedings of the twelfth annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  pdf(833.53 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


This paper describes an algorithm for maintaining an approximating triangulation of a deforming surface in \mathbb{R}^3 . The triangulation adapts dynamically to changing shape, curvature, and topology of the surface.

Keywords: adaptive meshing, algorithms, computational geometry, deformation, differential geometry, metamorphoses, proofs

11 Triangulating three-colored graphs

Sampath K. Kannan, Tandy J. Warnow

March 1991 **Proceedings of the second annual ACM-SIAM symposium on Discrete algorithms**


Full text available:  pdf(720.43 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

12 A new technique to compute polygonal schema for 2-manifolds with application to null-homotopy detection

Tamal K. Dey

June 1994 **Proceedings of the tenth annual symposium on Computational geometry**

Full text available:  pdf(782.31 KB)


Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We provide a new technique for deriving optimal sized polygonal schema for triangulated compact 2-manifolds without boundary in $O(n)$ time, where n is the size of the given triangulation T . We first derive a polygonal schema P embedded in T using Seifert-Van Kampen's theorem. A reduced polygonal schema Q of optimal size is computed from P , where a surjective mapping from the ...

13 Planar separators and parallel polygon triangulation (preliminary version)

Michael T. Goodrich

July 1992 **Proceedings of the twenty-fourth annual ACM symposium on Theory of computing**


Full text available:  pdf(999.01 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

14 QMESH: an interactive visualization tool for quadrilateral mesh-generation

Michael Orr

January 2001 **The Journal of Computing in Small Colleges**, Volume 16 Issue 2

Full text available:  pdf(181.90 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

QMesh, my undergraduate research project, involves the design, implementation, and experimental evaluation of algorithmic techniques for quadrilateral mesh-generation. A large percentage of this project is the study of techniques for converting triangulations to quadrangulations. This paper is geared towards the understanding of implementation issues that are involved in computing the triangulation of a simple polygon and its dual tree, which are necessary procedures for computing a quadrangu ...

15 Face fixer: compressing polygon meshes with properties

Martin Isenburg, Jack Snoeyink

July 2000 **Proceedings of the 27th annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(1.00 MB)

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Most schemes to compress the topology of a surface mesh have been developed for the lowest common denominator: triangulated meshes. We propose a scheme that handles the topology of arbitrary polygon meshes. It encodes meshes directly in their polygonal representation and extends to capture face groupings in a natural way. Avoiding the triangulation step we reduce the storage costs for typical polygon models that have group structures and property data.

Keywords: connectivity encoding, mesh compression

16 Quasi-greedy triangulations approximating the minimum weight triangulation

Christos Levcopoulos, Drago Krznaric

January 1996 **Proceedings of the seventh annual ACM-SIAM symposium on Discrete algorithms**

Full text available:  pdf(1.17 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

17 On good triangulations in three dimensions

Tamal K. Dey, Chanderjit L. Bajaj, Kokicki Sugihara

May 1991 **Proceedings of the first ACM symposium on Solid modeling foundations and CAD/CAM applications**


Full text available:  pdf(859.99 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

18 Numerical stability of algorithms for 2D Delaunay triangulations

Steven Fortune

July 1992 **Proceedings of the eighth annual symposium on Computational geometry**

Full text available:  [pdf\(910.51 KB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We show that two Delaunay triangulation algorithms, a diagonal-flipping algorithm and an incremental algorithm, can be implemented in approximate arithmetic. The two algorithms have worst-case running time $O(n^2)$ on a set of n sites. The correctness assertion is that the algorithms produce a triangulation of the set of sites so that each triangle has an "almost empty" circumcircle, i.e., a circumscribing pseudo ...

19 Triangulation and CSG representation of polyhedra with arbitrary genus

Tamal K. Dey

June 1991 **Proceedings of the seventh annual symposium on Computational geometry**


Full text available:  [pdf\(852.72 KB\)](#)

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20 Triangulation: A multi-resolution topological representation for non-manifold meshes

Leila De Floriani, Paola Magillo, Enrico Puppo, Davide Sobrero

June 2002 **Proceedings of the seventh ACM symposium on Solid modeling and applications**

Full text available:  [pdf\(299.21 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We address the problem of representing and processing non-regular, non-manifold two-dimensional simplicial meshes, that we call triangle-segment meshes, at different levels of detail. Such meshes are used to describe spatial objects consisting of parts of mixed dimensions, and with a non-manifold topology. First, we describe a multi-resolution model for non-regular, non-manifold meshes, that we call a Non-manifold Multi-Tessellation (NMT). We consider the selective refinement query, which is at ...

Keywords: data structures, multiresolution, non-manifold modeling

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